CLAIMS

What is claimed is:

1. A method of fabricating an inkjet printhead, comprising:

providing a printhead substrate;

fabricating a thinfilm structure on the substrate;

forming a break trench structure in a surface region of the substrate in which a feed slot is to be formed;

subsequently abrasively machining the substrate through the break trench structure to form the feed slot.

2. The method of Claim 1 further comprising the step of applying a barrier layer to the thinfilm structure after forming the break trench structure and before abrasively machining the substrate.

3. The method of Claim 1 wherein the step of fabricating the thinfilm structure includes fabricating the thinfilm structure on a first surface of the substrate, and the step of forming a break trench structure includes forming the break trench structure in the first surface of the substrate.

4. The method of Claim 3 wherein the step of abrasively machining the substrate includes

abrasively drilling the substrate from a second surface of the substrate to the break trench structure formed in the first surface.

5. The method of Claim 1 wherein the step of forming a break trench structure includes etching the trench during an etch process.

6. The method of Claim 1 wherein the feed slot has a periphery, and the step of forming the break trench structure includes:

forming a peripheral break trench around the perimeter of the feed slot.

7. The method of Claim 6 wherein the step of forming the break trench structure further includes forming a guide trench within the periphery.

8. The method of Claim 1 wherein the step of forming the break trench structure includes forming a broad trench over the region of the feed slot.

9. The method of Claim 1 wherein the ink slot includes a plurality of spaced small slots, and the step of forming the break trench structure includes forming a plurality of small trenches, one each for the spaced small slots.

10. The method of Claim 9 wherein the step of abrasively machining the substrate results in a plurality of small substrate islands remaining in areas separating the small slots.

11. The method of Claim 1, wherein:

the step of providing a printhead substrate includes providing a silicon substrate, and

the step of forming a break trench structure includes etching the silicon substrate with a TMAH (Tetra Methyl Ammonium Hydroxide) etch process.

12. The method of Claim 1, wherein the step of forming a break trench structure includes forming

unconnected chip stop trenches about a periphery of the to-be-formed feed slot.

13. The method of Claim 12, wherein said unconnected chip stop trenches include left side and right side trenches bordering elongated side edges of the periphery, and top and bottom trenches bordering top and bottom edges of the periphery.

14. The method of Claim 12, wherein said unconnected chip stop trenches consist of left side and right side trenches bordering elongated side edges of the periphery, and wherein no trenches border top and bottom edges of the periphery.

15. A method of fabricating an inkjet printhead, comprising:

providing a wafer of a printhead substrate material;

fabricating a thinfilm structure on the wafer for each printhead to be formed on the wafer;

forming a break trench structure in a surface region of the substrate in which a feed slot is to be formed for each printhead to be formed on the wafer;

applying a barrier layer to the thinfilm structure;

subsequently abrasively machining the wafer through the break trench structure to form the feed slot for each printhead to be formed on the wafer;

attaching an orifice plate structure for each printhead to be formed on the wafer;

sawing the wafer to separate individual printheads; and

attach the printhead to printhead circuitry.

16. The method of Claim 15, wherein:

the step of providing a wafer includes providing a silicon substrate wafer, and

the step of forming a break trench structure includes etching the silicon substrate wafer with a TMAH (Tetra Methyl Ammonium Hydroxide) etch process.

17. The method of Claim 15 wherein the step of fabricating the thinfilm structure includes fabricating the thinfilm structure on a first surface of the wafer, and the step of forming a break trench structure includes forming the break trench structure in the first surface of the wafer.

18. The method of Claim 17 wherein the step of abrasively machining the wafer includes

abrasively drilling the wafer from a second surface of the wafer to the break trench structure formed in the first surface.